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SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's full Name: Everett White Examiner #: 67057 Date: 3/8/2002

Art Unit: 1623 Phone Number 308-4621 Serial Number: 09/623,364

Mail Box: CM1-8B19 and Bldg/Room Location: CM1-7B13 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, key words, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

*-See Bib data Sheet

Title of Invention: *

Inventors (please provide full names): *

Earliest priority Filing Date: *

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search the formula of the amineoxy-cyclodextrin derivatives of Claims 1-7, the preparation thereof in Claim 8, the oximes of Claim 10, and derivatives of nucleotide or nucleoside pyrimidines or purines with the amineoxy-cyclodextrins of Claim 11. A copy of the claims and the abstract is provided.

The Bib Data Sheet which discloses the inventor names, title of the invention, and the earliest priority filing date is also provided.

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Searcher: _____

Type of Search

Vendors and cost where applicable

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WHAT IS CLAIMED IS:

1. Aminooxy-cyclodextrin derivatives of the formula 1:

$$5 \quad CD = (X - Y - ONH_2)_n , \quad (1)$$

wherein

CD is a mono- or polydeoxy α -, β - or γ -cyclodextrin, carrying in its 6-, 3- and/or 2-position the aminoxy function containing group (X-Y-ONH₂), and optionally carrying further substituents different from (X-Y-ONH₂) in their 6-, 3- and/or 2-positions, and wherein Y is a linker group between the aminoxy group and the mono- or polydeoxy-CD-group,

x is a functional group or an atom necessary to connect the linker Y and the deoxy CD group, or Y is a direct bond when X is a direct bond,
and n is ≥ 1 , but ≤ 24 , 21 and 18 for α -, β - or γ -cyclodextrin, respectively, as well as the aminoxy protected derivatives thereof, especially ethoxy-ethylidene protected aminoxy and acetone oxime derivatives thereof.

2. A derivative according to claim 1, wherein Y and X are both direct bonds.

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3. A derivative according to claim 1 or 2, wherein one or more of the primary hydroxy groups at a 6-position of α -, β - or γ -CD are substituted with a X-Y-ONH₂ fragment, wherein X and Y have the meaning of claim 1.

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4. A derivative according to any one of claims 1 and 3, wherein Y is a linear or branched alkylene, alkenylene with one or more double bonds which may be either isolated or conjugated, alkynylene with one or more triple bonds which may be either isolated or conjugated, or arylene or arylalkylene fragments where aryl may be substituted or not substituted, whereby the alkylene, alkenylene and alkynyle-

ne fragments may be linear or branched and preferably contain 2-12 C-atoms in the chain, and one or more of the chain members (methylene groups) may be replaced by -NH-, -O-, -S-, -S-S-, -C(O)NH-, -C(O)O-, -OP(O)(OH)O-, -S(O)-, SO₂- , -CHR-, where R is preferably alkyl, aryl, -OR', -NH₂, -NHR', -NR'₂, -OH, -COOH, or -ONH₂ groups and where R' is alkyl, aryl, or acyl.

5. A derivative according to any one of the claims 1, ~~2~~ and
10 4, wherein X is -O-, -S-, -NH-, -NR"-, -OCO-, -NH-O-,
=NO-, -NHC(O)-, -OP(O)(OH), -R"C=NO-, where R" is linear
or branched lower alkyl.

15 6. A derivative according to the claims 4 ~~or 5~~, wherein Y
is alkylene containing 2-12 C-atoms, wherein one or more of
the chain members may be replaced by -NH-, -O-, -S-, -
C(O)NH-, -C(O)O-, or CHR₁ wherein R₁ is methyl, ethyl or
propyl and X is -O-, -S-, -NH-, -OC(O)-, and -NH-C(O)-.

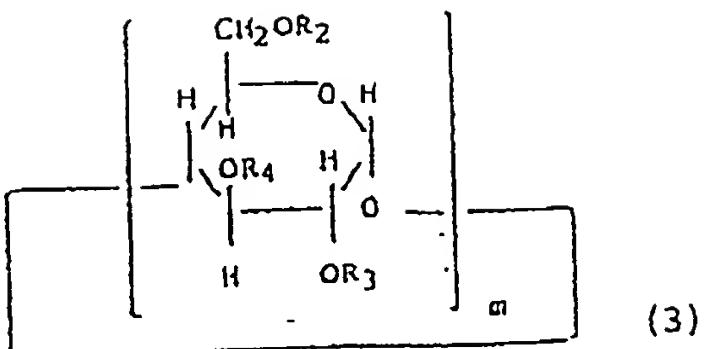
20 7. Any compound according to claim 1~~1/2~~, wherein one or more
of the hydroxyl groups at 6-, 3-, and/or 2- position(s) are
substituted with a group, for example, H₂N-, HS-, -COOH,
alkoxy-, such as C₁ - C₆- alkoxy-, aryloxy-, wherein aryl
25 is preferably phenyl, benzyl, or tolyl, or with acyloxy
group, wherein acyl preferably originates from C₁ - C₆-
carboxyl, or benzoic acids, and wherein alkyl-, aryl-, and
acyloxy- can additionally contain functional groups like
H₂N-, HS-, -COOH in their structure, in side chain or in
30 aromatic ring.

8. Method according to claim 1 or 3 for preparing compound
of formula 1, wherein X is O-~~and~~ and wherein:

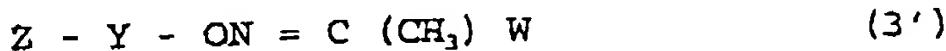
35 a) cyclodextrin of formula (3)

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including R₂, R₃, and R₄ are hydroxyl groups or substituents defined in claim 7, exemplified by unsubstituted alkoxy, like C₁ - C₆- alkoxy or aryloxy like phenyl-, benzyl-, tolyl-, or acyloxy, in which substituents' functional groups, if they exist, are protected whenever necessary, whereby at least one of the positions 6, 3, and/or 2 contain hydroxyl group, preferably 6- hydroxy group, is alkylated with a compound according to formula (3'):

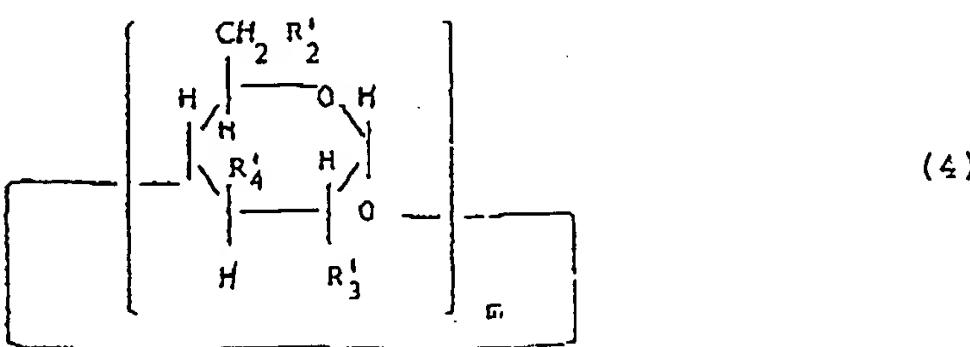


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wherein W means group -OC₂H₅ or -CH₃, m and Y are as defined in claims 1 or 3, and Z is a reactive group, preferably Cl, Br, I, tosyl, mesyl or epoxy group, and optionally 25 protecting group(s) is/are removed, or

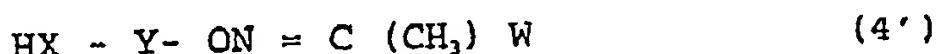
b) a cyclodextrin derivative of formula (4) is alkylated

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wherein R'₂, R'₃, R'₄ are hydroxy or activated groups like tosyl, mesyl, halogen, ester, epoxy, preferably tosyl or halogen, possibly bound through a "linker group, like alkylen, or substituent as defined in claim 7," said 5 substituent being in a protected form if necessary, whereby the CD-derivative contains at least one of said activated groups with the compound of formula (4')



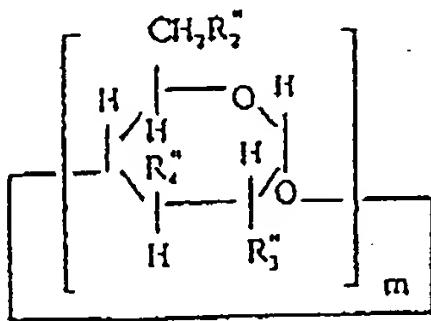
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wherein X and Y are as in claim 1, or as in 3 and 4, and X is preferably S or HN- fragment and Y has the meaning defined in claim 6, and W is defined as above, and protecting group(s) is/are possibly removed if necessary, or

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c) a cyclodextrin derivative of compound with formula (5)

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(5)

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wherein at least one of the groups R''₂, R''₃, and R''₄ mean thiol-, amino-, karboxy- etc. group possibly linked directly to deoxy-CD-ring, or mean alkyleneoxy- or acyloxy groups which contain at least one thiol-, amino-, karboxy-, etc. group, or their derivative, and the remaining functional groups are hydroxyl groups or they have the meaning described in claim 7 for the substituents, and exist, if necessary, in a protected form, typical example being unsubstituted alkoxy, aryloxy, or acyloxy, modified with an appropriate aminoxy protected substituted hydroxylamine according to formula (3'), after which the protecting

group(s) are removed, or

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d) CD-derivative of formula (5), which contains one or more of keto or aldehyde groups, possibly bound through a linker group, is allowed to react with bisaminoxy alkanes of formula (5')

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wherein t is 2-12, and wherein one of the methylene groups
15 can be substituted with oxygen or sulfur atom, or wherein -
NH- or -S-S- groups, and a protecting group is removed if
necessary.

20 9. The use of any of the CD-derivatives of claim 1~~1A~~ for
preparation of oximes with ketones or aldehydes, for
preparation of aminoxy derivatives of nucleotide- and
nucleoside pyrimidines or purines, or for preparation of
inclusion complexes with guest molecules by said CD-
25 derivatives.

10. Oximes of any one of the aminoxy-CDs of claim 1~~1A~~
with a synthetic or natural aldehydes or ketones.

30 11. Derivatives of nucleotide or nucleoside pyrimidines or
purines with aminoxy-CDs, wherein aminoxy group is linked
to heterocyclic ring, preferably through pyrimidine C-4 and
purine C-6, and wherein pyrimidine and purine are preferably
cytosine or adenine as such or as their derivatives.

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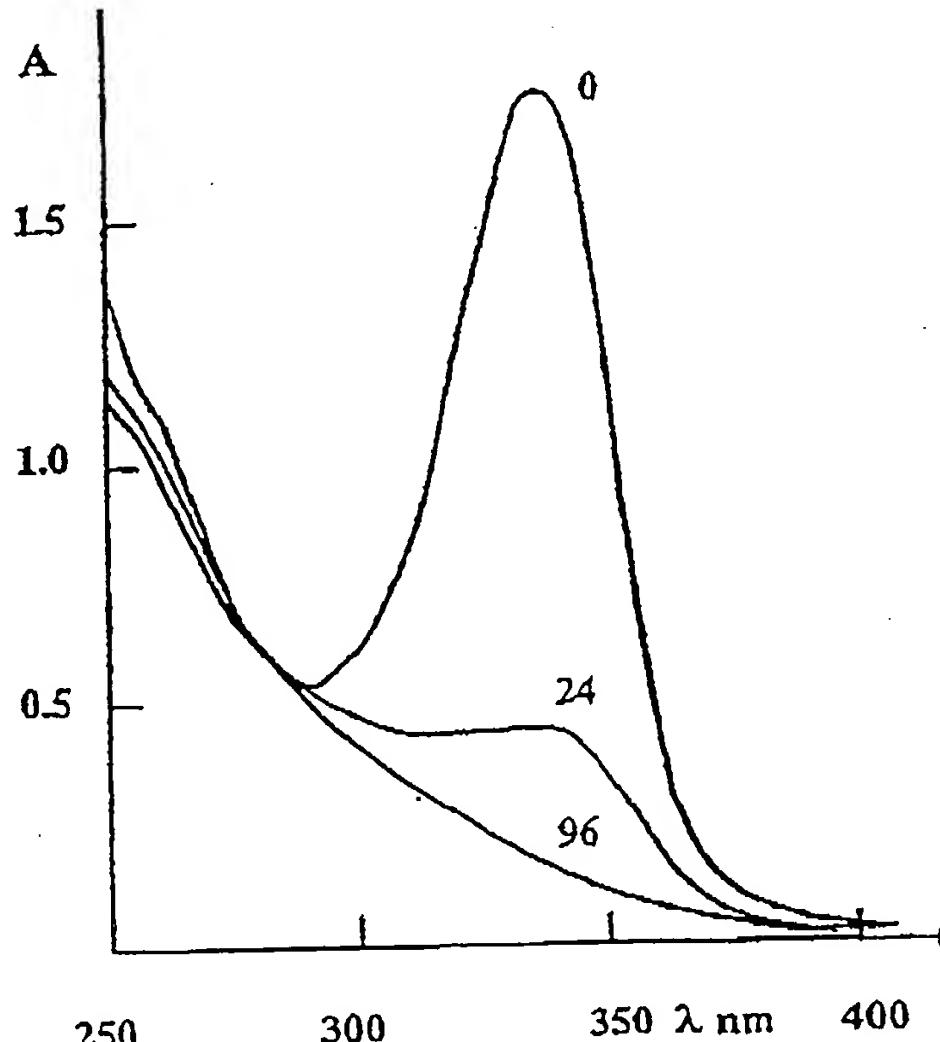
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(54) Title: NOVEL DERIVATIVES OF CYCLODEXTRINS

(57) Abstract

The present invention is directed to novel amineoxy-cyclodextrin derivatives of the formula (1): $CD - (X - Y - ONH_2)_n$, wherein CD is a mono- or polydeoxy α -, β -, or γ -cyclodextrin, carrying in its 6-, 3- and/or 2-position a group containing the amineoxy group, and optionally carrying substituents different from $(X-Y-ONH_2)$, Y is a linker group between the amineoxy group and the mono- or polydeoxy-CD group, X is a functional group or an atom necessary to connect the linker Y and the deoxy CD group, or Y is a direct bond when X is a direct bond, and n is ≥ 1 , but ≤ 24 , 21 and 18 for α -, β - or γ -cyclodextrin, respectively, the protected amineoxy derivatives thereof, as well the methods for their preparation and use.





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BIBDATASHEET

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**** CONTINUING DATA *******

THIS APPLICATION IS A 371 OF PCT/FI99/00187 03/04/1999

**** FOREIGN APPLICATIONS *******

FINLAND 980489 03/04/1998

IF REQUIRED, FOREIGN FILING LICENSE GRANTED SMALL ENTITY ****

** 11/03/2000

Foreign Priority claimed 35 USC 119 (a-d) conditions met	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after Allowance	STATE OR COUNTRY RUSSIAN FEDERATION	SHEETS DRAWING 4	TOTAL CLAIMS 11	INDEPENDENT CLAIMS 2
Verified and Acknowledged	Examiner's Signature _____ Initials _____				

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TITLE

Novel derivatives of cyclodextrins

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